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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: George P. Lomonosoff *et al.*

Serial No.: 09/304,967

Group No.: 1645

Filed: 05/05/99

Examiner: P.Bui

Entitled:
**Modified Plant Viruses as Vectors of
Heterologous Peptides**

CERTIFICATE RE: SEQUENCE LISTING

Assistant Commissioner for Patents
Washington, D.C. 20231

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Dated:

9/13/00

By:

Traci E. Light

Sir or Madam:

I hereby state that the enclosed Sequence Listing is being submitted in paper copy and on a computer-readable diskette, and that the content of the paper and computer readable copies are the same.

Dated:

7/13/2000

By:

Peter G. Carroll
Registration No. 32,837

MEDLEN & CARROLL, LLP
220 Montgomery Street, Suite 2200
San Francisco, California 94104
415.705.8410

Insert

SEQUENCE LISTING

<110> Lomonossoff, George P.
Johnson, John E.
Bendig, Mary
Jones, Tim
Longstaff, Marian

<120> Modified Plant Viruses as Vectors of Heterologous Peptides

<130> DOW-04646

<140> 09/304,967
<141> 1999-05-05

<150> 08/471,048
<151> 1995-06-06

<150> 08/612,858
<151> 1996-03-12

<150> 08/137,032
<151> 1993-03-18

<150> PCT/GB20/00589
<151> 1992-04-02

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<170> PatentIn Ver. 2.0

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<213> Cowpea mosaic virus

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<212> PRT
<213> Foot-and-mouth disease virus

*P1
CwD*

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1 5 10 15

Val Leu Ala Gln Lys Val Ala Arg Thr Leu Pro
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<211> 81
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aaaaggtgc tcggactctt c 81

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<211> 81
<212> DNA
<213> Foot-and-mouth disease virus

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ccaacgagcc tgagaaggat c 81

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<211> 52
<212> PRT
<213> Foot-and-mouth disease virus

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Gln Val Leu Ala Gln Lys Val Ala Arg Thr Leu Pro Ser Thr Pro Pro
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Ala Pro Phe Ser
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<211> 156
<212> DNA
<213> Foot-and-mouth disease virus

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cggactcttc ctagcactcc tcctgctcca ttttca 156

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*AI
Conv*

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1 5 10 15

Asn Leu Arg Gly Asp Leu Gln Val Leu Ala Gln Lys Val Ala Arg Thr
20 25 30

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35 40 45

Phe Asp Leu Ile
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<212> DNA
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ttttcagacg ttacagcagt aacttttgac ttaatc 156

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<212> DNA
<213> Foot-and-mouth disease virus

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ctagaagttc aaaaccgagt tttccaacga gcctgagaag gatcgtgagg aggacgaggt 120
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Ala Val Thr Phe Asp Leu Ile
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<211> 69
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gacttaatc 69

<210> 13
<211> 69
<212> DNA
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<400> 13
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gacttaatc 69

<210> 14
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

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1 5 10 15

Arg Asp Arg Ser Asp
20

<210> 15
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
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cggacgt 67

<210> 16
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<212> DNA
<213> Artificial Sequence

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<211> 47
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<213> Artificial Sequence

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 1 5 10 15
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 20 25 30
 Asp Arg Asp Arg Ser Asp Val Thr Ala Val Thr Phe Asp Leu Ile
 35 40 45

 <210> 18
 <211> 141
 <212> DNA
 <213> Artificial Sequence

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 cgccttgagg gcatcgagga agagggcggt gagcgcgatc gtgatcggtt ggacgtcaca 120
 gcagtaacct ttgacttaat c 141

 <210> 19
 <211> 16
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic

 <400> 19
 Ser Thr Pro Ala Thr Gly Ile Asp Asn His Arg Glu Ala Lys Leu Asp
 1 5 10 15

 <210> 20
 <211> 52
 <212> DNA
 <213> Artificial Sequence

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 <210> 21
 <211> 44
 <212> DNA
 <213> Artificial Sequence

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<210> 22
<211> 42
<212> PRT
<213> Artificial Sequence

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1 5 10 15
Ala Ser Thr Pro Ala Thr Gly Ile Asp Asn His Arg Glu Ala Lys Leu
20 25 30
Asp Val Thr Ala Val Thr Phe Asp Leu Ile
35 40

<210> 23
<211> 126
<212> DNA
<213> Artificial Sequence

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gctactggaa tcgataatca tagagaagct aaattggacg tcacacgagt aactttgac 120
ttaatc 126

<210> 24
<211> 39
<212> PRT
<213> Foot-and-mouth disease virus

<400> 24
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1 5 10 15
Leu Gln Val Leu Ala Gln Lys Val Ala Arg Thr Leu Pro Asp Val Thr
20 25 30
Ala Val Thr Phe Asp Leu Ile
35

<210> 25
<211> 117
<212> DNA
<213> Foot-and-mouth disease virus

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gctcaaaaagg ttgctcgac tcttcctgac gtcacacgag taactttga cttaatc 117

<210> 26
<211> 117
<212> DNA
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<400> 26
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cgagtttcc aacgagcctg agaaggactg cagtgtcgtc attgaaaact gaattag      117

<210> 27
<211> 5
<212> PRT
<213> Foot-and-mouth disease virus

<400> 27
Ser Thr Pro Pro Ala
    1             5

<210> 28
<211> 17
<212> DNA
<213> Foot-and-mouth disease virus

<400> 28
ctagcactcc tcctgct          17

<210> 29
<211> 13
<212> DNA
<213> Foot-and-mouth disease virus

<400> 29
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<210> 30
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<213> Foot-and-mouth disease virus

<400> 30
Pro Phe Ser Asp
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<210> 31
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<212> DNA
<213> Foot-and-mouth disease virus

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<210> 32
<211> 10
<212> DNA
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<400> 32
ggtaaaagtc                10

<210> 33
<211> 19
<212> PRT
<213> Foot-and-mouth disease virus

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 Val Pro Asn Leu Arg Gly Asp Leu Gln Val Leu Ala Gln Lys Val Ala
 1 5 10 15
 Arg Thr Leu

<210> 34
 <211> 57
 <212> DNA
 <213> Foot-and-mouth disease virus

<400> 34
 gttcctaatt tgagaggaga tcttcaagtt ttggctcaaa aggttgctcg gactctt 57

<210> 35
 <211> 57
 <212> DNA
 <213> Foot-and-mouth disease virus

<400> 35
 caaggattaa actctcctct agaagttcaa aaccgagttt tccaaacgagc ctgagaa 57

<210> 36
 <211> 14
 <212> PRT
 <213> Foot-and-mouth disease virus

<400> 36
 Lys Asp Ala Thr Gly Ile Asp Asn His Arg Glu Ala Lys Leu
 1 5 10

<210> 37
 <211> 42
 <212> DNA
 <213> Foot-and-mouth disease virus

<400> 37
 aaagatgcta ctggaatcga taatcataga gaagcaaaat tg 42

<210> 38
 <211> 42
 <212> DNA
 <213> Foot-and-mouth disease virus

<400> 38
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<210> 39
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 <213> Foot-and-mouth disease virus

<400> 39
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Arg Asp Arg Asp Arg Ser
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<210> 40
<211> 66
<212> DNA
<213> Foot-and-mouth disease virus

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cctagaggac cagacagacc tgaaggaata gaagaggaag gtggagaacg cgatcgagat 60
agatca                                66

<210> 41
<211> 66
<212> DNA
<213> Foot-and-mouth disease virus

<400> 41
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tctagt                                66

<210> 42
<211> 13
<212> PRT
<213> Soybean mosaic virus

<400> 42
Met Glu Gly Gly Ser Ser Lys Thr Ala Val Asn Thr Gly
    1           5           10

<210> 43
<211> 39
<212> DNA
<213> Soybean mosaic virus

<400> 43
atggaaggag gatcatctaa gactgctgtg aacactggg                         39

<210> 44
<211> 39
<212> DNA
<213> Soybean mosaic virus

<400> 44
atggaaggag gatcctctaa gactgctgtg aacactggg                         39

<210> 45
<211> 39
<212> DNA
<213> Soybean mosaic virus

<400> 45
atggaaggag gatcatctaa gactgctgtt aacactggg                         39

<210> 46
<211> 16
<212> PRT
<213> Homo sapiens

<400> 46
Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
    1           5           10          15

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<210> 47
<211> 48
<212> DNA
<213> Homo sapiens

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<210> 48
<211> 48
<212> DNA
<213> Homo sapiens

<400> 48
ccacaatgaa gacgaccact atgatctgga cgaggaccaa gatgacga 48

<210> 49
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
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ctgctgtt 68

<210> 50
<211> 64
<212> DNA
<213> Artificial Sequence

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acaa 64

<210> 51
<211> 68
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic

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ctgctgtt 68

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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

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<210> 54
<211> 64
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic

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acaa 64

<210> 55
<211> 68
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<213> Artificial Sequence

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ctgctgtt 68

<210> 56
<211> 64
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic

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acaa 64

<210> 57
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
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 ctgctgtt 68

<210> 58
 <211> 64
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

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 acaa 64

<210> 59
 <211> 33
 <212> PRT
 <213> Soybean mosaic virus

<400> 59
 Asn Ile Tyr Ala Pro Ala Arg Leu Thr Ile Ala Ala Ala Asn Ser Ser
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Ile Asn Ile Ala Ser Val Gly Thr Leu Tyr Ala Thr Tyr Glu Val Glu
 20 25 30

Leu

<210> 60
 <211> 37
 <212> PRT
 <213> Soybean mosaic virus

<400> 60
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 1 5 10 15

Gly Gly Ser Ser Lys Thr Ala Val Asn Thr Gly Arg Leu Tyr Ala Ser
 20 25 30

Tyr Thr Ile Arg Leu
 35

<210> 61
 <211> 37
 <212> PRT
 <213> Soybean mosaic virus

<400> 61
 Asn Ile Ala Thr Asp Leu Val Pro Ala Arg Leu Val Ile Ala Leu Leu
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Asp Gly Ser Ser Ser Thr Ala Val Ala Ala Gly Arg Ile Tyr Ala Ser
 20 25 30

Tyr Thr Ile Gln Met
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<210> 62
<211> 17
<212> PRT
<213> Lucerne transient streak virus

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Ile Ala Ala Ala Asn Ser Ser Ile Asn Ile Ala Ser Val Gly Thr Leu
    1           5           10          15

Tyr

<210> 63
<211> 51
<212> DNA
<213> Lucerne transient streak virus

<400> 63
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<210> 64
<211> 51
<212> DNA
<213> Lucerne transient streak virus

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<210> 65
<211> 51
<212> DNA
<213> Lucerne transient streak virus

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<210> 66
<211> 16
<212> PRT
<213> Homo sapiens

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    1           5           10          15

<210> 67
<211> 48
<212> DNA
<213> Homo sapiens

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<210> 68
<211> 48
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<210> 70
<211> 83
<212> DNA
<213> Lucerne transient streak virus

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aaggatatttg tatcgatcac acc 83

<210> 71
<211> 83
<212> DNA
<213> Lucerne transient streak virus

<400> 71
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ataaacatag ctatgtgttt tac 83

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<212> DNA
<213> Lucerne transient streak virus

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<210> 73
<211> 83
<212> DNA
<213> Lucerne transient streak virus

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gctaacatag ctatgtgttt tac 83

<210> 74
<211> 83
<212> DNA
<213> Lucerne transient streak virus

<400> 74
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<210> 75
<211> 83
<212> DNA
<213> Lucerne transient streak virus

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<400> 75
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<210> 76
 <211> 83
 <212> DNA
 <213> Lucerne transient streak virus

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 aagatgacga tatcgatcac acc 83

<210> 77
 <211> 83
 <212> DNA
 <213> Lucerne transient streak virus

<400> 77
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 tctactgctg ctatgtggg tac 83

<210> 78
 <211> 83
 <212> DNA
 <213> Lucerne transient streak virus

<400> 78
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 accaagatga cgacgatcac acc 83

<210> 79
 <211> 83
 <212> DNA
 <213> Lucerne transient streak virus

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 ggttctactg ctatgtggg tac 83

<210> 80
 <211> 83
 <212> DNA
 <213> Lucerne transient streak virus

<400> 80
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 aggaccaaga tgacgatcac acc 83

<210> 81
 <211> 324
 <212> PRT
 <213> Tomato bushy stunt virus

<400> 81
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 1 5 10 15

Met Ala Pro Val Ala Val Thr Arg Gln Leu Val Gly Ser Lys Pro Lys
 20 25 30

Phe Thr Gly Arg Thr Ser Gly Ser Val Thr Val Thr His Arg Glu Tyr
 35 40 45
 Leu Ser Gln Val Asn Asn Ser Thr Gly Phe Gln Val Asn Gly Gly Ile
 50 55 60
 Val Gly Asn Leu Leu Gln Leu Asn Pro Leu Asn Gly Thr Leu Phe Ser
 65 70 75 80
 Trp Leu Pro Ala Ile Ala Ser Asn Phe Asp Gln Tyr Thr Phe Asn Ser
 85 90 95
 Val Val Leu His Tyr Val Pro Leu Cys Ser Thr Thr Glu Val Gly Arg
 100 105 110
 Val Ala Ile Tyr Phe Asp Lys Asp Ser Glu Asp Pro Glu Pro Ala Asp
 115 120 125
 Arg Val Glu Leu Ala Asn Tyr Ser Val Leu Lys Glu Thr Ala Pro Trp
 130 135 140
 Ala Glu Ala Met Leu Arg Val Pro Thr Asp Lys Ile Lys Arg Phe Cys
 145 150 155 160
 Asp Asp Ser Ser Thr Ser Asp His Lys Leu Ile Asp Leu Gly Gln Leu
 165 170 175
 Gly Ile Ala Thr Tyr Gly Gly Ala Gly Thr Asn Ala Val Gly Asp Ile
 180 185 190
 Phe Ile Ser Tyr Ser Val Thr Leu Tyr Phe Pro Gln Pro Thr Asn Thr
 195 200 205
 Leu Leu Ser Thr Arg Arg Leu Asp Leu Ala Gly Ala Leu Val Thr Ala
 210 215 220
 Ser Gly Pro Gly Tyr Leu Leu Val Ser Arg Thr Ala Thr Val Leu Thr
 225 230 235 240
 Met Thr Phe Arg Ala Thr Gly Thr Phe Val Ile Ser Gly Thr Tyr Arg
 245 250 255
 Cys Leu Thr Ala Thr Thr Leu Gly Leu Ala Gly Gly Val Asn Val Asn
 260 265 270
 Ser Ile Thr Val Val Asp Asn Ile Gly Thr Asp Ser Ala Phe Phe Ile
 275 280 285
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 290 295 300
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 305 310 315 320
 Asp Val Ser Leu

<210> 82
 <211> 331
 <212> PRT
 <213> Red clover necrotic mosaic virus

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 Lys Ser Lys Gln Arg Ser Gln Pro Arg Asn Arg Thr Pro Asn Thr Ser
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 Val Lys Thr Val Ala Ile Pro Phe Ala Lys Thr Gln Ile Ile Lys Thr
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 Val Asn Pro Pro Pro Lys Pro Ala Arg Gly Ile Leu His Thr Gln Leu
 35 40 45
 Val Met Ser Val Val Gly Ser Val Gln Met Arg Thr Asn Asn Gly Lys
 50 55 60
 Ser Asn Gln Arg Phe Arg Leu Asn Pro Ser Asn Pro Ala Leu Phe Pro
 65 70 75 80
 Thr Leu Ala Tyr Glu Ala Ala Asn Tyr Asp Met Tyr Arg Leu Lys Lys
 85 90 95
 Leu Thr Leu Arg Tyr Val Pro Leu Val Thr Val Gln Asn Ser Gly Arg
 100 105 110
 Val Ala Met Ile Trp Asp Pro Asp Ser Gln Asp Ser Ala Pro Gln Ser
 115 120 125
 Arg Gln Glu Ile Ser Ala Tyr Ser Arg Ser Val Ser Thr Ala Val Tyr
 130 135 140
 Glu Lys Cys Ser Leu Thr Ile Pro Ala Asp Asn Gln Trp Arg Phe Val
 145 150 155 160
 Ala Asp Asn Thr Thr Val Asp Arg Lys Leu Val Asp Phe Gly Gln Leu
 165 170 175
 Leu Phe Val Thr His Ser Gly Ser Asp Gly Ile Glu Thr Gly Asp Ile
 180 185 190
 Phe Leu Asp Cys Glu Val Glu Phe Lys Gly Pro Gln Pro Thr Ala Ser
 195 200 205
 Ile Val Gln Lys Thr Val Ile Asp Leu Gly Gly Thr Leu Thr Ser Phe
 210 215 220
 Glu Gly Pro Ser Tyr Leu Met Pro Pro Asp Ala Phe Ile Thr Ser Ser
 225 230 235 240
 Ser Phe Gly Leu Phe Val Asp Val Ala Gly Thr Tyr Leu Leu Thr Leu
 245 250 255
 Val Val Thr Cys Ser Thr Thr Gly Ser Val Thr Val Gly Gly Asn Ser
 260 265 270
 Thr Leu Val Gly Asp Gly Arg Ala Ala Tyr Gly Ser Ser Asn Tyr Ile
 275 280 285
 Ala Ser Ile Val Phe Thr Ser Ser Gly Val Leu Ser Thr Thr Pro Ser
 290 295 300

Val Gln Phe Ser Gly Ser Ser Gly Val Ser Arg Val Gln Met Asn Ile
 305 310 315 320
 Cys Arg Cys Lys Gln Gly Asn Thr Phe Ile Leu
 325 330
 <210> 83
 <211> 41
 <212> PRT
 <213> Red clover necrotic mosaic virus
 <400> 83
 Ala Ser Ile Val Gln Lys Thr Val Ile Asp Leu Gly Gly Thr Leu Thr
 1 5 10 15
 Ser Phe Glu Gly Pro Ser Tyr Leu Met Pro Pro Asp Ala Phe Ile Thr
 20 25 30
 Ser Ser Ser Phe Gly Leu Phe Val Asp
 35 40
 <210> 84
 <211> 27
 <212> PRT
 <213> Red clover necrotic mosaic virus
 <400> 84
 Ala Ser Ile Val Gln Lys Tyr Val Ile Asp Leu Gly Gly Thr Leu Thr
 1 5 10 15
 Ser Phe Glu Gly Pro Ser Tyr Leu Met Pro Pro
 20 25
 <210> 85
 <211> 17
 <212> PRT
 <213> Red clover necrotic mosaic virus
 <400> 85
 Ser Ile Val Gln Lys Thr Val Ile Asp Leu Gly Gly Thr Leu Thr Ser
 1 5 10 15
 Phe
 <210> 86
 <211> 51
 <212> DNA
 <213> Red clover necrotic mosaic virus
 <400> 86
 agcatcgta agaaaactgt aattgatctc ggtgggacac tcacttcttt c 51
 <210> 87
 <211> 51
 <212> DNA
 <213> Red clover necrotic mosaic virus
 <400> 87
 agcatcgta agaaaactgt aattgatctc ggtgggacac tcacttcttt c 51

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<210> 88
<211> 51
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 88
agcatcgtac agaaaactgt aattgatctc ggtggacgt taacttcttt c      51

<210> 89
<211> 16
<212> PRT
<213> Homo sapiens

<400> 89
Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
    1           5           10          15

<210> 90
<211> 48
<212> DNA
<213> Homo sapiens

<400> 90
ggtgttactt ctgctcctga tactagacct gtcctgggtt ctactgct      48

<210> 91
<211> 48
<212> DNA
<213> Homo sapiens

<400> 91
ccacaatgaa gacgaccact atgatctgga cgaggaccaa gatgacga      48

<210> 92
<211> 78
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 92
gaaaactgta ggttgttactt ctgctcctga tactagacct gtcctgggtt ctactgctat 60
tgatctcggt gggacgtt                                78

<210> 93
<211> 82
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 93
acgtcttttg acatccacaa tgaagacgac cactatgatc tggacgagga ccaagatgac 60
gataactaga gccaccctgc aa                                82

<210> 94
<211> 78
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 94
gaaaactgta attgggttta cttctgctcc tgataactaga cctgctcctg gttctactgc 60
tgatctcggt gggacgtt                                78

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<210> 95
<211> 82
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 95
acgtctttg acattaacca caatgaagac gaccactatg atctggacga ggaccaagat 60
gacgactaga gccaccctgc aa 82

<210> 96
<211> 78
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 96
gaaaactgta attgatggtg ttacttctgc tcctgatact agacctgctc ctggttctac 60
tgctctcggt gggacgtt 78

<210> 97
<211> 82
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 97
acgtctttg acattaacta ccacaatgaa gacgaccact atgatctgga cgaggaccaa 60
gatgacgaga gccaccctgc aa 82

<210> 98
<211> 78
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 98
gaaaactgta attgatctcg gtgttacttc tgctcctgat actagacctg ctcctggttc 60
tactgctggt gggacgtt 78

<210> 99
<211> 82
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 99
acgtctttg acattaacta gagccacaat gaagacgacc actatgatct ggacgaggac 60
caagatgacg accaccctgc aa 82

<210> 100
<211> 78
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 100
gaaaactgta attgatctcg gtgggtttac ttctgctcct gatactagac ctgctcctgg 60
ttctactgct gggacgtt 78

<210> 101
<211> 82
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 101
acgtctttg acattaacta gagccaccac aatgaagacg accactatga tctggacgag 60
gaccaagatg acgaccctgc aa 82

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<210> 102
<211> 78
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 102
gaaaactgta attgatctcg gtgggggtgt tacttctgct cctgatacta gacctgctcc 60
tggttctact gctacgtt 78

<210> 103
<211> 82
<212> DNA
<213> Red clover necrotic mosaic virus

<400> 103
acgtctttg acattaacta gagccacccc cacaatgaag acgaccacta tgatctggac 60
gaggaccaag atgacgatgc aa 82

<210> 104
<211> 24
<212> PRT
<213> Tobacco rattle virus

<400> 104
Ser Thr Pro Ala Ser Gly Gly Ser Gly Ala Thr Pro Pro Pro Ala Ser
    1           5           10          15

Gly Gly Ala Val Arg Pro Asn Pro
    20

<210> 105
<211> 107
<212> DNA
<213> Tobacco rattle virus

<400> 105
cgtcgactcc ggcctcgggg ggaagtggtg caacaccacc tcctgcgagt gggggtgctg 60
tgcgtcctaa tccttgatgt cgtcaaataa aaccttaag ggacctt 107

<210> 106
<211> 19
<212> PRT
<213> Tobacco rattle virus

<400> 106
Ser Thr Pro Ala Ser Gly Gly Ser Gly Ala Thr Pro Pro Pro Ala Ser
    1           5           10          15

Gly Gly Ala

<210> 107
<211> 84
<212> DNA
<213> Tobacco rattle virus

<400> 107
tcgactccgg cctcgaaaaa aagtggtgca acaccaccc tcgtcgagtgg gggtgcttga 60
tgtcgtaaa tcaaaccctt aagg 84

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<210> 108
 <211> 82
 <212> DNA
 <213> Tobacco rattle virus

<400> 108
 gaggccggag ccccccttca ccacgttgtg gtggaggacg ctcacccac gaactacagc 60
 agtttagttt ggaaattccc tg 82

<210> 109
 <211> 14
 <212> PRT
 <213> Tobacco rattle virus

<400> 109
 Ser Thr Pro Ala Ser Gly Gly Ser Gly Ala Thr Pro Pro Pro
 1 5 10

<210> 110
 <211> 69
 <212> DNA
 <213> Tobacco rattle virus

<400> 110
 tcgactccgg cctcgggggg aagtggtgca acaccacctc cttgatgtcg tcaaataaaa 60
 ccttaagg 69

<210> 111
 <211> 68
 <212> DNA
 <213> Tobacco rattle virus

<400> 111
 gaggccggag ccccccttca ccacgttgtg gtggaggaac tacagcagtt tagttggaa 60
 attccctg 68

<210> 112
 <211> 9
 <212> PRT
 <213> Tobacco rattle virus

<400> 112
 Ser Thr Pro Ala Ser Gly Gly Ser Gly
 1 5

<210> 113
 <211> 54
 <212> DNA
 <213> Tobacco rattle virus

<400> 113
 tcgactccgg cctcgggggg aagtggttga tgtcgtaaaa tcaaaccctt aagg 54

<210> 114
 <211> 53
 <212> DNA
 <213> Tobacco rattle virus

<400> 114
 gaggccggag ccccccttca ccaactacag cagtttagtt tggaaattcc ctg 53

<210> 115		
<211> 4		
<212> PRT		
<213> Tobacco rattle virus		
<400> 115		
Ser Thr Pro Ala		
1		
<210> 116		
<211> 39		
<212> DNA		
<213> Tobacco rattle virus		
<400> 116		
tcgactccgg cctgatgtcg tcaaataaaa cctttaagg		39
<210> 117		
<211> 38		
<212> DNA		
<213> Tobacco rattle virus		
<400> 117		
gaggccggac tacagcagtt tagtttgaa attccctg		38
<210> 118		
<211> 2		
<212> PRT		
<213> Tobacco rattle virus		
<400> 118		
Ser Thr		
1		
<210> 119		
<211> 33		
<212> DNA		
<213> Tobacco rattle virus		
<400> 119		
tcgacttgat gtcgtcaaat caaaccttta agg		33
<210> 120		
<211> 32		
<212> DNA		
<213> Tobacco rattle virus		
<400> 120		
gaactacagc agtttagttt ggaaattccc tg		32
<210> 121		
<211> 31		
<212> PRT		
<213> S. aureus		
<400> 121		
Gly Gln Asn Asn Gly Asn Gln Ser Phe Glu Glu Asp Thr Glu Lys Asp		
1 5 10 15		
Lys Pro Lys Tyr Glu Gln Gly Gly Asn Ile Ile Asp Ile Asp Phe		
20 25 30		

<210> 122
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 122
ctagcatgaa ttttgacctt c

21

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<210> 123
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 123
gtacttaaaa ctggaagaat t

21